

Rejection of Claims 1-6 and 9-10 Under 35 U.S.C. §103

Claims 1-6 and 9-10 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,764,493 (Lilley).

The Office Action states that it would have been obvious to one of ordinary skill in the art at the time of the invention was made to form barium titanate-based particles by hydrothermally reacting barium hydroxide with titanium dioxide in isopropyl alcohol and directly mixing the particles formed by the reaction with niobium ethoxide and isopropyl alcohol to form a niobium oxide coating on the surface of the particles without drying the particles, thereby saving time.

Applicant respectfully disagrees that the method of claim 1 is obvious in view of Lilley. The method of claim 1 recites the steps of hydrothermally producing barium titanate-based particles, maintaining the particles in a wet environment, and forming a coating on surfaces of the particles.

Lilley fails to suggest the claimed step of maintaining the particles in a wet environment between the step of hydrothermally producing the particles and the step of forming a coating on surfaces of the particles. In contrast, Lilley discloses forming the particles in a reaction in a protic solvent (e.g., isopropyl alcohol), washing the particles with water and drying the particles to form a powder. The powder is mixed with isopropyl alcohol and niobium oxide to form a slurry which is then hydrolyzed to form coatings on the particles. There is no suggestion in Lilley regarding maintaining the particles in isopropyl alcohol between formation and coating as stated in the Office Action.

Moreover, there is no recognition in Lilley, or in any other cited reference, of advantages associated with the step of maintaining the particles in a wet environment between formation and coating. Such advantages are described in the present specification and include increased particle dispersibility which enables formation of MLC's with thin dielectric layers (See pages 4, lines 4-6; page 7, lines 1-12). Because there was no recognition in the art of the advantages of this step at the time of the present invention, modifying the Lilley process to include this step is impermissible hindsight.

Furthermore, one of ordinary skill in the art would not have been motivated to modify the Lilley process to save time as suggested in the Office Action. The Lilley process includes an extremely long reaction step that lasts at least 48 hours and up to 400 hours. (See Column 3,



lines 40-41). Eliminating the short drying step would have an insignificant effect on the length of the Lilley process.

Also, one of ordinary skill in the art would not have been motivated to maintain the particles in isopropyl alcohol between formation and coating as suggested in the Office Action because such a modification is inconsistent with the step in Lilley of washing the particles with water between formation and coating. Lilley states that washing with water is necessary to remove excess, unreacted barium hydroxide (See column 4, lines 48-52). Therefore, modifying Lilley in the manner stated in the Office Action would prevent removal of the excess barium hydroxide which would render the process of Lilley unsatisfactory for its intended purpose. Thus, there would have been no motivation to make such a modification (See MPEP 2143.01).


Because one of ordinary skill in the art would not have been motivated to modify the process of Lilley as stated in the Office Action, a prima facie case of obviousness has not been met and claim 1 is patentable over Lilley. Claims 2-6 and 9-10 depend from claim 1 and are patentable for at least this reason. Accordingly, Applicant respectfully requests withdrawal of the rejection of claims 1-6 and 9-10 under 35 U.S.C. §103(a) as being unpatentable over Lilley.

Rejection of Claims 7-8 Under 35 U.S.C. §103

Claims 7-8 were rejected under 35 U.S.C. §103(a) as being unpatentable over Lilley in view of U.S. Patent No. 5,833,361 (Funk). Claims 7 and 8 depend from claim 1. Funk fails to provide the deficiencies of Lilley noted above with respect to the method of claim 1. Therefore, for at least this reason, claims 7 and 8 are patentable over the combination of Lilley in view of Funk. Applicant also does not accede to the motivation to combine Lilley and Funk in the manner stated in the Office Action. Accordingly, Applicant respectfully requests withdrawal of the rejection of claims 7-8 under 35 U.S.C. §103(a) as being unpatentable over Lilley in view of Funk.

New Claims

New claims 11-20 depend from claim 1 and are patentable over the cited references for at least the reasons noted above that claim 1 is patentable.




CONCLUSION

In view of the foregoing amendments and remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicant's attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

Respectfully submitted,
Costantino et al., Applicants

By: 
Robert H. Walat, Reg. No. 46,324
Peter C. Lando, Reg. No. 34,654
Wolf, Greenfield & Sacks, P.C.
600 Atlantic Avenue
Boston, Massachusetts 02210-2211
Telephone: (617) 720-3500

Docket No. 97046CIPDIV (C00698.70138.US)
Date: May 2, 2003
x05/02/03x

D